

Old Bevier Passive Treatment System – Performance and Reconstruction Plans

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The Old Bevier Passive Treatment System is an abandoned mine land (AML) reclamation project located in Macon County, approximately 50 miles north of Columbia, Missouri. The treatment system was constructed by the Missouri Department of Natural Resources-Land Reclamation Program (MDNR-LRP) with assistance from the Office of Surface Mining Reclamation and Enforcement, Mid-Continent Region (OSMRE-MCR). This treatment system employs a network of French drains to collect underground acid mine drainage (AMD) and transport it to the passive treatment system. The original treatment system was constructed in 1990 and required a large amount of alkaline-dilution water to produce a net-alkaline discharge. Operational difficulties with the relatively distant dilution water source limited the effectiveness of the original system. A major reconstruction effort of the system was completed in 2001. The enhanced 2001 treatment facility consists of two vertical flow ponds in conjunction with two oxidation ponds and three wetlands. The enhanced passive treatment system has been successful in removing the majority of the iron and acidity from the AMD. An average of 98.5% of the iron has been removed by the 16-year old passive system; however, the rate of flow through the vertical flow ponds has diminished, the discharge pH has declined, and there is a considerable accumulation of iron hydroxide sludge that requires removal. We will discuss the water quality trends and functionality of the enhanced Old Bevier Passive Treatment System, and the ongoing plans to rehabilitate the system again, as well as the future outlook for passive treatment systems in general in Missouri.